in a comparison gas which is 2% O_2/ 98% N_2. All of the signals were generated with 10 V across the materials, unless otherwise specified. Blank spaces indicate that there was no detectable signal when that gas composition was contacted with that material. Unless otherwise specified, the gases were measured at 2000 ppm in N_2.

Table 5b

Change in temperature in °C

	$AlVO_4$	$BaCuO_{2.5}$	Zn_4TiO_6
CO in N_2	18.1	-6	6
N_2	18.1	-6	6

Example 6

This example illustrates the use of the AC impedance technique for the measurement of the response of 19 metal oxide semiconducting materials in the presence of 4 gas compositions at 400°C. The signals listed in Table 6 below are the ratios of the magnitudes of the impedances of the materials when exposed to the gas compositions shown to the magnitudes of the impedances in 10,000 ppm O_2 in N_2. The gases used were 200 ppm NO_2 in N_2, 200 ppm NO_2 and 10,000 ppm O_2 in N_2, 1000 ppm CO in N_2, and N_2.

Table 6

	$MgAl_2O_4$	1% Zn:$MgAl_2O_4$	ZnO	WO_3	$NiFe_2O_4$	SnO_2	TiO_2
NO_2 in N_2	0.6245	0.5544	55.85	8.772	5.008	9.243	1.536
NO_2 in O_2/ N_2	0.7680	0.6787	47.38	9.468	12.93	10.56	1.585
CO in N_2	1.531	1.459	0.1235	0.1865	1.248	0.0051	0.0116
N_2	0.8242	0.9219	4.1290	1.716	1.327	0.3208	1.055

	$MnTiO_3$	NiO	$SrNb_2O_6$	$CeVO_4$	1% Nb:TiO_2	$FeTiO_3$	Pr_6O_{11}
NO_2 in N_2	0.8643	0.5692	1.217	0.9847	1.937	1.299	0.5475
NO_2 in O_2/ N_2	0.8475	0.9662	1.228	0.9977	1.674	1.034	0.5452

CO in N_2	37.35	9.679	0.6501	1.045	0.0112	0.6009	1.184
N_2	1.264	1.257	1.011	1.001	0.8811	1.028	1.103

	$SrTiO_3$	$Ba_2Cu_2O_5$	$CuMnFe_2O_4$	$LaFeO_3$	$Zn_2V_2O_7$
NO_2 in N_2	0.6524	0.7869	0.9559	0.8401	1.209
NO_2 in O_2/N_2	0.7596	0.7834	0.9399	0.8506	1.114
CO in N_2	0.0178	0.7603	0.6089	2037	0.8529
N_2	1.061	1.063	1.136	1.756	0.9900

Example 7

This example illustrates the use of the AC impedance technique for the measurement of the response of 19 metal oxide semiconducting materials in the presence of 4 gas compositions at 550°C. The signals listed in the table are from the AC impedance technique. The signals are the ratios of the magnitudes of the impedances of the materials when exposed to the gas compositions shown to the magnitudes of the impedances in 10,000 ppm O_2 in N_2. The gases used were 200 ppm NO_2 in N_2, 200 ppm NO_2 & 10,000 ppm O_2 in N_2, 1000 ppm CO in N_2, and N_2.

Table 7

	$MgAl_2O_4$	1% Zn:$MgAl_2O_4$	ZnO	WO_3	$NiFe_2O_4$	SnO_2
NO_2 in N_2	0.9894	0.9583	3.866	2.335	3.025	1.655
NO_2 in O_2/N_2	0.8937	0.8984	5.272	2.006	3.553	3.390
CO in N_2	1.046	0.9697	0.0133	0.2034	0.2506	0.0069
N_2	1.067	1.060	0.7285	0.9526	1.208	0.2666

	TiO_2	$MnTiO_3$	NiO	$SrNb_2O_6$	$CeVO_4$	1% Nb:TiO_2	$FeTiO_3$
NO_2 in N_2	1.135	1.010	0.9483	1.006	1.003	1.271	1.193
NO_2 in O_2/N_2	1.314	1.014	0.5207	1.044	0.9975	1.302	1.073
CO in N_2	0.0017	44.00	1.194	0.2814	1.104	0.0021	0.6743
N_2	0.7263	1.280	1.341	0.9830	1.024	0.477	1.054

	Pr_6O_{11}	$SrTiO_3$	$Ba_2Cu_2O_5$	$CuMnFe_2O_4$	$LaFeO_3$	$Zn_2V_2O_7$
NO_2 in N_2	1.223	0.9055	0.7071	1.148	1.302	1.199
NO_2 in O_2/ N_2	0.9656	0.9881	0.3812	0.9891	0.9429	1.086
CO in N_2	62.76	0.0029	3.0892	2.557	123.3	0.4726
N_2	1.495	1.210	1.333	1.681	1.789	0.9034

Example 8

This example illustrates the use of the AC impedance technique for the measurement of the response of 23 semiconducting materials in the presence of 4 gas compositions at 650-700°C. The signals listed in the table are from the AC impedance technique. The signals are the ratios of the magnitudes of the impedances of the materials when exposed to the gas compositions shown to the magnitudes of the impedances in 10,000 ppm O_2 in N_2. The gases used were 200 ppm NO_2 in N_2, 200 ppm NO_2 & 10,000 ppm O_2 in N_2, 1000 ppm CO in N_2, and N_2.

Table 8

	$MgAl_2O_4$	1% Zn:$MgAl_2O_4$	ZnO	WO_3	$NiFe_2O_4$	SnO_2	TiO_2
NO_2 in N_2	0.9450	1.022	0.4876	0.7151	0.5807	0.5419	0.5617
NO_2 in O_2/ N_2	0.6412	0.8310	1.235	1.281	1.105	0.8265	1.030
CO in N_2	0.9074	0.9684	0.0348	0.2693	0.0408	0.0238	0.0015
N_2	1.056	1.100	0.2753	0.6332	0.4421	0.3521	0.3957

	$MnTiO_3$	NiO	$SrNb_2O_6$	$CeVO_4$	1% Nb:TiO_2	$FeTiO_3$	Pr_6O_{11}
NO_2 in N_2	1.445	1.379	0.8852	1.050	0.5711	0.9072	1.516
NO_2 in O_2/ N_2	0.9561	0.8127	0.9862	1.135	0.8263	0.9524	0.9814
CO in N_2	113.3	1.782	0.0301	1.565	0.0035	0.4346	8005
N_2	1.877	1.409	0.8788	1.080	0.2802	0.8050	1.962

	$SrTiO_3$	$Ba_2Cu_2O_5$	$CuMnFe_2O_4$	$LaFeO_3$	$Zn_2V_2O_7$
NO_2 in N_2	1.051	0.5615	3.401	1.331	0.8631
NO_2 in	0.9320	0.9703	1.001	1.013	0.9459